Use of a Preoperative Playroom to Prepare Children for Surgery

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Key words
- preoperative anxiety
- anxiety questionnaire
- playing
- m-YPAS

Abstract

Objective: The aim of this study was to evaluate the efficacy of a playroom next to the operating room to reduce preoperative anxiety in children.

Methods and Materials: In 2009, we designed a playroom in a preoperative waiting room in our hospital. The playroom had colored toys and cars appropriate for different ages and a TV and video to show cartoons. Patients were randomly assigned into a case or a control group. Control group patients were admitted to the preoperative waiting room 30 min prior to operation. Case group patients were admitted to the playroom for the same period of time. The anxiety levels of the children were compared using the modified Yale Preoperative Anxiety Scale (m-YPAS).

Results: In this study 200 children were evaluated (100 patients in the case group, 100 patients in the control group). There were 20 female and 80 male patients in the case group with a mean age of 4.33 ± 1.5 years and 26 female and 74 male patients in the control group with a mean age of 3.87 ± 1.2 years (p = NS). Inguinal herniorraphy was the most common procedure in both groups. Preoperative anxiety was significantly decreased for all categories of the anxiety score as assessed by m-YPAS questionnaire.

Conclusion: A preoperative playroom is a very effective method to reduce preoperative anxiety in children.

Introduction

The need to alleviate preoperative anxiety and stress has been well documented [1]. In pediatric surgery, as in other disciplines, the gradual switch to day-surgery procedures and increased parental involvement in treatment have had a positive impact on the frightening experience of children undergoing surgery.

Reducing children's anxiety can make the hospital experience more pleasant (or less unpleasant) for both children and their parents [2]. According to the literature, therapeutic play interventions to alleviate the stress of hospitalization have increased during the past decade [3–5], but there are some limitations to these studies. First, such play interventions should commence approximately 1 week before the child's operation, and this may not be feasible for every patient. Secondly, such interventions can be used only in children over the age of 7 years [6]; in fact, it is not clear whether children below this age benefit from this intervention. We hypothesized that setting up a playroom next to the operating room could improve the level of preoperative anxiety in children requiring an operation. In this report we examined our overall experience with a preoperative playroom since 2009 and found that almost all patients showed less preoperative anxiety.

Methods and Materials

The clinical study was approved by the ethical committee of our university. Data were collected from the one of the largest pediatric surgery units in central Iran (St. Zahra Hospital, Isfahan). In 2009, we designed a playroom in the preoperative hall of our hospital. The hospital has 3 main halls: 1) a preoperative waiting hall, 2) operating rooms, 3) postoperative recovery hall (post anesthesia care unit). The playroom included colored toys and cars appropriate for different ages and a TV and video to show cartoons (**Fig. 1, 2**). This area was separated from other parts of the preoperative waiting room by several movable plastic curtains. To examine the effects of having a playroom, a randomized controlled trial was done between January 2009 and April 2010. A single-blind technique was used, with

received April 15, 2010
accepted after revision August 16, 2010

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DOI http://dx.doi.org/10.1055/s-0030-1265172
Published ahead of print
Eur J Pediatr Surg

ISSN 0939-7248

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Fig. 1 Picture of the preoperative room.

Fig. 2 Picture of the preoperative room.

the research physicians who were responsible for data collection unaware of the allocation of the study participants. The authors randomly assigned patients into a case and a control group (patients with an even identical number were assigned to the case group and those with an odd number to the control group). Control patients were admitted to the preoperative waiting hall 30 min prior to operation. The hall was a simple hall with numerous beds. Patients from the case group were admitted to the playroom for the same period of time. After 30 min, patients were taken to the entrance of the operating room and physicians measured the anxiety of patients by observing their behavior and interviewing the parents 15 min before surgery.

Following Cohen [7] and Polit et al. [8], the sample size was based on 100 subjects in each group. The study population was drawn from children over the age of 4 years who were about to undergo elective surgery. To avoid bias, children with major preoperative medical illnesses such as prolonged cancer and patients who had had previous operations were excluded from the study. Children with developmental delay or other documented psychiatric disorders were also excluded.

The anxiety level of the children was measured using the observational instrument suggested by Kain et al. [9] (modified Yale Preoperative Anxiety Scale, m-YPAS). This scale has 5 categories (activity, emotional expressivity, state of arousal, vocalization, and use of parents) and 22 items which reflected most behaviors observed in the preoperative waiting area. The concurrent validity of the m-YPAS scale was supported by correlation of the scores with Spielberger's State/Trait Inventory for Children [STAIC] as the gold standard [10]. In addition to having a good reliability and validity, the m-YPAS has several other important features. It can be applied to all children older than 2 years of age in less than 1 min. It is also more sensitive to changes in anxiety levels than global instrument [9]. In this study, we did not collect objective data such as the patient's pulse rate or postoperative analgesic requirements.

All statistical analyses were calculated using SPSS for Windows (SPSS Inc., Chicago, IL, USA) version 15. Approval for the study was obtained from parents after they were told the purpose of the study. The assessment of differences in continuous variables between groups was performed using the Mann-Whitney test. The assessment of differences in nominal categorical variables was performed using the chi-square test. A p-value of less than 0.05 was considered statistically significant.

Table 1 Comparison of m-YPAS categories between groups.

	Case group	Control group
activity(*)		
looking around, curious, playing with toys, reading	64%	20%
not exploring or playing	16%	50%
moving from toy to parent in unfocused manner	18%	12%
actively trying to get away	2%	8%
vocalization(*)		
reading	56%	16%
responding to adults but in whispers	22%	38%
quiet, no sounds or responses to adults	16%	18%
whimpering, moaning, groaning,silently crying	4%	18%
crying or may be screaming	2%	8%
crying, screaming loudly, sustained	0%	2%
emotional expressivity(*)		
manifestly happy, smiling	52%	8%
neutral, no visible expression on face	30%	32%
worried (sad) to frightened	12%	48%
distressed, crying, extremely upset	4%	8%
state of apparent arousal(*)		
alert, looks around occasionally	52%	12%
withdrawn, sitting still and quiet	12%	46%
vigilant, looking quickly all around	34%	30%
panicked whimpering	2%	2%

number = percent; (*): significant

Results

In this study 200 children were evaluated (100 patients in the case group, 100 patients in the control group). There were 20 female and 80 male patients in case group with a mean age of 4.33 ± 1.5 years and 26 female and 74 male patients in control group with a mean age of 3.87 ± 1.2 years. (p = NS). Inguinal herniorraphy was the most common procedure in both groups.

m-YPAS category analysis (Table 1, 2)

A) Activity

Percentages of activity scores in children are compared in **Table 1**. Results indicated that there was a statistically significant difference in this m-YPAS category between groups

Table 2 Comparison of the category 'use of parents' between groups.

	Case group (n = 100)	Control group (n = 100)
Use of parents(*)		
busy playing, sitting idle, doesn't need parent	34 %	14 %
reaches out to parent	46 %	24 %
looks to parent quietly, apparently watches actions	18 %	56 %
keeps parent at distance or may actively withdraw from parent	2 %	16 %

(*): significant

($p = 0.001$). Children in the case group showed more activity compared with controls.

B) Vocalization

Table 1 shows the percentages of vocalization scores for both groups. There was a statistically significant difference between groups ($p = 0.001$). Children in the case group did more reading, more asking of questions, making comments and laughing preoperatively.

C) Emotional expressivity

The percentages for emotional expressivity scores are shown in **Table 1**. There was a statistically significant difference between groups ($p = 0.001$). Children in the control group showed more distress, with crying and wide eyes.

D) State of apparent arousal

In **Table 1**, the percentages for the state of apparent arousal scores are compared between groups ($p = 0.001$). Children in the case group were more alert and looked around occasionally.

E) Use of parents

The percentages for the use of parents' scores are shown in **Table 2**. There was a statistically significant difference between groups ($p = 0.001$). Children in the case group engaged in age-appropriate behavior and did not need their parents.

Discussion

Anxiety is a normal emotional state that we all experience at various times in our lives. Like adults, children also suffer from anxiety. In fact, anxiety in children should be expected at specific times during life. Children may not yet have the ability to vocalize their feelings, nor the coping skills to manage them, making their fears even more difficult for them to deal with.

The operating room is an unfamiliar situation and can be an anxious place for child, giving rise to anxiety. Many physicians believe that when children are anxious, parents should encourage them to engage in activities they enjoy, such as playing with a favorite toy, doing a fun arts and crafts activity, playing a game, reading a book, or playing with friends.

Our study is proof of the old saying that laughter is the best medicine. The time immediately prior to surgery can be frightening for anyone undergoing surgery, especially children [11]. Preoperative anxiety is a frustrating and challenging problem. Thoughts about pain and being separated from parents and strange places and smells all increase anxiety levels, lower the ability of children to cope with surgery and encourage negative associations of healthcare [12]. Lumley and Melamed [13] reported that a high anxiety level at the time of operation was associated with significant postoperative problems, including nightmares, bed wetting, food rejection and negativity. On the other hand, research has shown that laughing can alter neurochemical levels, boost the immune system, reduce muscle tension and improve respiration [11]. In a recent Cochrane review, Yip et al. [14] reviewed non-pharmacological interventions used to assist the induction of anesthesia in children. They showed that the presence of parents at the induction of the child's anesthesia has been the most commonly investigated intervention (8 trials), but has not been shown to reduce anxiety or distress in children, or increase their co-operation during the induction of anesthesia. They also demonstrated that children playing hand-held video games before induction were significantly less anxious than controls or pre-medicated children.

In the past decade, there has been an increase in the use of methods to help children cope with the anxiety of hospital treatments. Methods include therapeutic play interventions [15, 16] and clowns in waiting areas near the operating room [17, 18], but there are some limitations to such interventions [6].

Therapeutic play intervention needs a professional team specializing in behavior and emotion and this is not available in all children's hospitals. These interventions should be begun several weeks before each child's operation and this may not be feasible for every patient. Thus a more suitable means should be designed to reduce preoperative anxiety in children. Golan et al. [19] found that the preoperative presence of medically trained clowns to amuse children undergoing surgery significantly alleviated preoperative anxiety, but trained clowns are not available in every medical center.

In this study we used a specially designed playroom next to the operating theater to reduce preoperative anxiety. Our results showed that preoperative anxiety had decreased significantly in all categories of the anxiety score assessed by m-YPAS questionnaire. It seems that when children played or watched TV, they forgot about their upcoming surgery and the perception of an immanent threat decreased. One of the most important aspects of our study was to consider the feasibility of designing such a playroom next to every operating room, stocked with inexpensive and commercially available materials such as books and plastic toys. Small plastic animals, dolls, paints, drawing materials and imaginative games are among the best materials for playrooms. In contrast, according to the reports by Larosa-Nash [20] and Stewart [21], board games such as chess are not suitable for this purpose. It was noted that parents were more comfortable in this room, but we did not assess their anxiety in this study. Wollin et al. [2] reported that parents suggested that hospitals should create a more child-friendly environment, with more posters and toys, and children said that toys were one of the best aspects of a hospital visit.

In conclusion, we suggest using a preoperative playroom as an effective method to reduce anxiety in children who need elective surgery.

Acknowledgement

We thank Mrs. Mohadese Hamasaie for her contribution to this study.

Conflict of Interest: None

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